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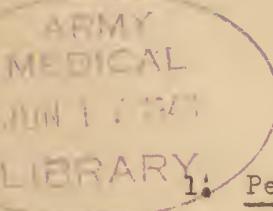
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Army Service Forces

Quartermaster Corps

CLIMATIC RESEARCH LABORATORY

Lawrence, Massachusetts



Monthly Report - 1 December 1943

Personnel

Five additional enlisted men have been assigned.
The following officers have reported for duty:-

1st Lt. William R. Christensen, M. C.
1st Lt. Walter R. Guthrie, Q.M.C.
1st Lt. Earl W. Tyler, Q.M.C.
2nd Lt. Lawrence W. Swan, Q.M.C.

2. Reports

The following reports have been sent to the Office of
The Quartermaster General, attention Colonel G. F. Doriot.

Report No. 50 A-B 12 November 1943

Bags, Sleeping, Mountain, Nos. 210-220
Thermal Insulation and Effect of Laundering
Fifteen Tables and Fourteen Figures

Seven grades of mountain sleeping bags were tested in the cold room at temperatures which varied from minus 20°F. to plus 10°F. Approximately 75 per cent of the tests were performed at 0°F. and minus 10°F. Ten subjects were exposed during a total of 126 individual exposures. The total exposure time amounted to more than 600 hours.

The bags were used singly, i.e., without an outer case or windproof shell. The numbers and filling of the bags are as follows:

Bag No. 210, E-813.2, containing 46 ounces of fill as follows:

75 per cent - 50/60 mixture
25 per cent curled fine chicken feathers

Bag No. 211, E-813-3, containing 54 ounces of fill as follows:

75 per cent - 40/60 mixture
25 per cent curled fine chicken feathers

Bag No. 212, E-813.4, containing 46 ounces of fill as follows:

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CLASSIFICATION CHANGED	
TO	UNCLASSIFIED
AUTH	Letter QMRDW-I
DATE	12 Oct 54
SECURITY OFFICER	

Frank B. Thompson

~~CONFIDENTIAL~~

40 per cent down
35 per cent waterfowl feathers
25 per cent curled fine chicken feathers

Bag No. 213, E-813.5, containing 46 ounces of fill as follows:

30 per cent curled hair
16 per cent down
24 per cent waterfowl feathers
30 per cent curled fine chicken feathers

Bag No. 214, E-813.6, containing 54 ounces of fill as follows:

30 per cent curled hair
16 per cent down
24 per cent waterfowl feathers
30 per cent fine chicken feathers

Bag No. 215, E-813.1, containing 46 ounces of 40/60 mixture.

Bag No. 220, E-813.7, filled with carded vinyon batts in lieu of waterfowl feathers and down.

No significant difference in thermal insulation as determined by tolerance times was observed between bags Nos. 210, 211, 212 and 215. This finding suggests that the substitute fills in the amounts used did not impair the inherent usefulness of the bags. The lower limit of adequacy of these bags was between 0° and minus 10°F. A bag was considered adequate if it provided thermal protection for six hours!

Bags Nos. 213 and 214, containing curled hair as a substitute for the down, were definitely inferior. The lower limit of their efficiency range was between plus 10° and 0°F.

Bag No. 220, filled with carded vinyon batts, was inferior to both of the above mentioned grades. Its breakdown point was somewhere between plus 20° and plus 10°F.

The effect of laundering of the bags Nos. 210, 211, 212 and 215 was investigated. It was concluded, that one laundering according to Paragraph 4, QMC Specifications No. 24a, 27 May 1942, did not affect the thermal insulation.

The weights and cubic volumes of the bags before and after use and under various other conditions were measured.

Report No. 50 C - 17 November 1943

A Method for Determining the Thermal Insulation of

R E S T R I C T E D

Clothing in Clo Units and Its Application in Bags, Sleeping, Mountain,
Nos. 210-215.

Two Tables and Two Figures

The bags used in this study were similar to those described above in Report No. 50 A-B.

A method for determining the thermal insulation value in clo units of sleeping bags and clothing has been introduced into this laboratory.

The clo values of six grades of sleeping bags (Nos. 210, 211, 212, 213, 214 and 215) has been determined prior to laundering and of four of these grades (Nos. 210, 211, 212 and 215) after laundering.

It is concluded that there is no significant difference in thermal insulation between sleeping bags Nos. 210, 211, 212 and 215, but that bag No. 211 is probably the best bag.

Sleeping bags Nos. 213 and 214 are definitely lower in clo value and are significantly less adequate than Nos. 210, 211, 212 and 215.

Washing of sleeping bags appears to reduce the thermal insulation value (expressed in clo units) a slight amount, but this was of statistical significance only in the case of bag No. 211.

Report No. 71 - 29 November 1943

Temperature Characteristics of the Cold Room

Eight Figures

The temperature of various regions of the cold room has been recorded continuously for a seven day period, as well as on certain isolated days at a time when the temperature was changing very rapidly. The experimental temperature range most frequently used in the laboratory was covered. This varied from plus 50°F. to minus 40°F.

Temperatures were measured by eight thermocouples recording on a Leeds and Northrup Micromax, and a single Mason Neilan recording gas thermometer.

It is concluded that during the periods of experimental use when an active attempt is made to control the temperature of the cold room, all temperatures within the room except those of the concrete floor surface and the air in the coils, follow the recorded room temperatures in the test section closely. The variation is usually less than plus or minus three degrees Fahrenheit.

Report No. 68 - Preliminary, Included in Daily Report, Monday, 1 November 1943.

R E S T R I C T E D

The moisture penetration through six differently processed sections and their performance in a pentagonal tent were studied at an exposure temperature of minus 30°F.

In the Daily Reports throughout the month, the following discussions were presented.

Standardization of Subjects
Tolerance Time
Grading of Sensation
Specifications for Testing of Handgear

3. Projects in Study

The following items have been investigated during the month; footgear, sleeping bag pads, two-man mountain tents, casualty bags, and mittens.

JOHN H. TALBOTT
Lt. Col., M. C.
Commanding Officer